Body image changes associated with dual-chamber pacemaker insertion in women

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Abstract:

Purpose:
The study's purpose was to examine body image changes in subjects participating in a long-term multicenter pacemaker trial.

Methods:
At study closeout, 383 adults, all of whom had received a dual-chamber pacemaker, completed questionnaires evaluating what effect their pacemaker or pacemaker site and scar had on them or their spouses or significant others.

Results:
Most reported that their pacemaker did not change the way they or their spouses or significant others felt about their body (73.2% and 93.5%, respectively). Most (87.1%) denied feeling differently because of the pacemaker site and scar. Most were not concerned how their clothes fit or about wearing a swimsuit (92.0% and 90.7%, respectively). Women were more concerned about how the pacemaker site and scar made them feel about their body (P = .001), clothes fitting (P = .002), and wearing a swimsuit (P = .004). Men were more concerned with how their spouses or significant others perceived them postimplantation (P = .021).

Conclusions:
Most subjects did not express undue concern about changes in body image.

Keywords: women | pacemaker implantation | body image

Article:

Introduction

During the year 2000, approximately 250,000 persons underwent pacemaker implantation in the United States.[1] These figures are expected to continue to increase with an aging population. In fact, estimates for the year 2004 indicate that more than 300,000 pacing units will be implanted in patients in the United States.[1] As technologic advances in device therapy increase, clinicians often focus on the medical or physical aspects of the pacemaker. Psychosocial adjustment to a new pacemaker may be overlooked.

Review of the literature

Trial investigators and research staff have undoubtedly acquired anecdotal information about participants' reactions to pacemaker implantation and clinical trial experiences; however, few studies have been performed that examine the psychologic impact of pacemaker implantation. Research has been equivocal regarding overall patient adaptation to a pacemaker, with study results having various interpretations.[2]

One aspect of patient satisfaction is whether there is a positive "acceptance" of the pacemaker. Wingate[2] has defined acceptance as "a process involving changes in the value system of the disabled person that enables him/her to overcome the negative effects of the disability" (p 94). Acceptance was viewed as an aspect of self-concept in which loss, in respect to the person undergoing permanent pacemaker implantation, is seen as a "change in outlook with respect to part of the self" (p 94). Beckker and colleagues[3] define "body-acceptance" as the degree to which an individual accepts parts of his or her own body. If one applies these concepts to the pacemaker recipient, then body acceptance (1 component of the overall psychosocial adaptation process) may be when the individual accepts the pacemaker, an implanted foreign object, as a part of his or her own body. Given that a physical alteration of the body occurs on implanting a permanent pacemaker, there remains a potential for an alteration of body image in the patient after the implantation of the pacemaker into his or her body.[4]

Blacher and Basch[5] identified 3 phases of adaptation for patients aged 47 to 90 years who had received permanent pacemakers. The first phase, which included the hospitalization period, described patients as having a reaction to acute stress, often associated with a preoccupation with medical terminology and a fear of complications including death. The second phase took place after hospital discharge and involved feelings of depression as a common reaction. The third, and last, phase of adaptation was the portion of time after the pacemaker had become integrated into the daily life of the patient. During this third phase, patients often forgot or ignored their prior pacemaker implantation. The authors found that those at greatest risk of serious postoperative depression were patients with previously independent and controlling personalities. Beery and Baas[6] similarly described 3 stages of acceptance for persons who received permanent pacemakers: a stage of shock, a stage in which the pacemaker "controls" the body, and a stage of "integration" with the pacemaker and the person's self.

Wingate[2] interviewed a convenience sample of 86 adults who had received permanent pacemakers in 1 clinical setting to determine whether the level of acceptance of loss varied according to age, gender, previous pacemaker implants, the time interval from when the pacemaker was implanted until interview, or the severity of preoperative illness. Acceptance scores were operationalized by use of the Acceptance of Disability Modified scale, in which higher scores indicate a higher level of acceptance than lower scores. The median patient age was 75.1 years, with a mean time since pacemaker implantation of 3.3 years. Approximately half of the subjects were women (47.7%). Subjects scored relatively high (mean score of 246 of a possible 288 on the Acceptance of Disability Modified scale), indicating that subjects had accepted their loss and did not perceive themselves as being disabled by pacemaker implantation. No significant differences were found in the level of acceptance and the variables studied in this small sample population.

Dodinot[7] found that 70 pacemaker recipients in France were anxious about malfunction and that this anxiety was increased by lack of adequate information about the device. One possible explanation that Dodinot offered was that pacemaker specialists are often preoccupied with the device and may be perceived as disregarding the person, which may lead to frustration and depression for the patient.

Pycha and colleagues[8] studied 42 patients who had received permanent implantable cardioverter defibrillators (ICDs) and 38 spouses of patients with ICDs. Although most participants (83.3%) nonetheless reported successful incorporation of the device into their body image, 57.1% viewed the device as excessive, 35.7% felt self-conscious, and 7.1% had difficulty looking at themselves or touching the area of implantation. Dubin and colleagues[9] examined quality of life in a younger group of patients with ICDs (mean age of study population 28 years). The authors discussed unique psychosocial concerns related to ICD implantation for younger patients. None of the patients reported feeling unattractive. However, 10 of the 16 patients (63%) worried about their clothes fitting over the device, and 11 of 16 patients specifically worried about wearing a bathing suit. More women (89%) than men (43%) reported anxiety about wearing a bathing suit; however, the difference was not statistically significant. Of the study population, 50% worried about sex and 41% avoided sex. There was a reported 50% decrease in social interactions, yet 71% of the study group returned to work after ICD placement. In general, ICDs are at least twice as large as permanent pacemakers. Dual-chamber pacemaker generators of today are smaller and more lightweight than the ICDs implanted in the studies described previously. In fact, dual-chamber pacemaker generators range in weight from 1 to 134 oz with average dimensions of 2 in × 2 in × 1/4 in.[10] However, differences in body image by age or gender in these previously studied patient populations warrant a more thorough understanding of these issues for patients undergoing pacemaker implantation. The purpose of this descriptive study was to examine the body image changes in adults who had received permanent pacemakers.

Study population

Subjects for this study were participants in the Mode Selection Trial in Sinus Node Dysfunction (MOST). MOST enrolled 2010 dual chamber pacemaker recipients with sinus node dysfunction and randomized the pacing mode to DDDR or VVIR. Patients were followed for a median of 3 years (1–5 years). The median age at entry in the trial was 74 years. The composite primary end

point was all-cause mortality and stroke. Participants were seen every 6 months for follow-up visits, with a phone contact between visits to closely monitor adverse events. At study closeout, patients volunteered to complete a questionnaire evaluating what effect their pacemaker or the pacemaker site and scar had on them or their spouses or significant others. The study sample consisted of 383 adults from 22 clinical sites, all of whom had received a dual-chamber pacemaker.

Methods and procedures

The design of the present survey was prospectively approved by the Ancillary Studies Committee of MOST. Each patient gave informed consent for these additional questions at the end of the trial. At study closeout, trial participants were asked to complete a questionnaire (Table I) evaluating what effect their pacemaker or the pacemaker site and scar had on them or their spouses or significant others. All participants were given the opportunity to participate in the study at the beginning of the last follow-up visit, that is, before the main study was unblinded and patients were informed of the study outcome. They were also given the option to take the survey home, then return it in a preaddressed, stamped envelope to a central data-collection center. The staff remained blinded to the responses of the participants.

Table I. Study questionnaire.
The following questions ask you about your *pacemaker site and scar*.

(Circle one number on each line.)	**Not at all**	**A little**	**Quite a bit**	**Very much**
Q. 1. Does your pacemaker itself change the way you feel about your body?.....	1	2	3	4
Q. 2. Does your pacemaker site/scar change the way you feel about your body?.....	1	2	3	4
Q. 3. Does your pacemaker site/scar affect the way your clothes fit?.....	1	2	3	4
Q. 4. Does your pacemaker site/scar cause concern about wearing a bathing suit?.....	1	2	3	4
Q. 5. Do you think your pacemaker has changed the way your spouse or significant other perceives (or feels about) your body?.....	1	2	3	4

The concepts for the questionnaire were operationalized with 4 Likert-type scale items. Provisions were made to allow for space to write in additional comments at the end of the questionnaire. The questionnaire was designed to be self-administered and took between 3 and 10 minutes to complete. The survey questions were adapted from a review of the literature of questionnaires concerned with patient acceptance levels for pacemakers and related devices. Four research nurses, 2 pacemaker nurses, the project officer of the MOST trial, and the principal investigator of the Clinical Coordinating Center reviewed the questionnaire for content validity. As a preliminary test, the questionnaire was given to 10 patients participating in the MOST trial to estimate the time needed to complete the questionnaire; evaluate clarity and utility of directions; solicit reactions from patients after completion in relation to questionnaire length,

comprehensiveness, and pertinence from their perspective; and test the mechanics of administration.

Statistical methods

Each item was scored on a 4-point Likert-type scale ranging from “not at all” to “very much.” Percent responses were calculated. Nonparametric Cochran-Mantel-Haenszel tests for ordinal data were used to compare responses between men and women, between patients 75 years and older and patients younger than 75 years, and between married and unmarried patients. A *P* value less than .05 was considered significant.

Results

The median age for the sample population was 74 years (range 22–93 years). Fifty-three percent of the sample population was aged less than age 75 years. There was an even distribution between men and women, with most (65%) of the sample population being married. Baseline characteristics of the sample are presented in Table II. The sample for this study is representative of the study population from the MOST Trial. Examination of summary statistics for the trial as a whole and for this subsample showed that the 2 groups were similar.

Table II. Baseline characteristics

Characteristic (N)	**MOST trial**	**This study**
Study participants	2010	383
Age - Median	74 yr	74 yr
(< 75 yr)	1023 (51%)	203 (53%)
Gender (female)	955 (48%)	192 (50%)
Marital status (married)	1099 (55%)	249 (65%)

MOST, Mode Selection Trial in Sinus Node Dysfunction.

Major findings

The majority of the patients (73.2%) stated that the pacemaker itself did not change the way they felt about their body; 14.5% were “a little” concerned, 5.4% were “quite a bit” concerned, and 7% were “very much” concerned. When asked whether the pacemaker site and scar changed the way the participants felt about their body, most (87.1%) said no. Similarly, most denied concerns about whether the pacemaker site and scar affected the way their clothes fit or about wearing a bathing suit (92% and 90.7% respectively). Most patients (93.5%) reported that the pacemaker had not changed the way their spouses or significant others perceived their body postimplantation.

Women were more likely to have greater concern over how the pacemaker site and scar made them feel about their body (*P* = .001), how clothes fit (*P* = .002), and about wearing a bathing suit (*P* = .004). However, men were more likely to be concerned about the way their spouses or significant others perceived them after pacemaker implantation (*P* = .021). Table III details the responses for females and males.

Table III. Responses for females (F) and males (M)

Question		Not at all	A little	Quite a bit	Very much	P value*
Does your pacemaker itself change the way you feel about your body?	F	74.5%	16.5%	5.9%	3.2%	.3
	M	71.9%	12.4%	4.9%	10.8%	
Does your pacemaker site/scar change the way you feel about your body?	F	80.6%	14.5%	3.8%	1.1%	.001
	M	93.5%	4.8%	0%	1.6%	
Does your pacemaker site/scar affect the way your clothes fit?	F	87.7%	8.6%	2.7%	1.1%	.002
	M	96.2%	3.8%	0%	0%	
Does your pacemaker site/scar cause concern about wearing a bathing suit?	F	86.3%	9.3%	2.2%	2.2%	.004
	M	95.1%	2.7%	1.1%	1.1%	
Do you think your pacemaker has changed the way your spouse/significant other perceives your body?	F	96.8%	3.2%	0%	0%	.021
	M	90.7%	6.0%	2.2%	1.1%	

* From score test.

Younger patients (aged <75 years) reported a slightly but not significantly higher level of concern about wearing a bathing suit (11.5% of younger patients expressing some level of concern vs 6.6% of older patients, $P = .09$) or about their spouse's or significant other's perception of them (8.5% of younger patients expressing some level of concern vs 4% of older patients, $P = .09$). There were no differences between the age groups for the other 3 questions or between the marital status groups for any questions.

Discussion

Generally, patients reported positive body image adaptation as measured by our survey. However, any impact of the pacemaker itself on body image (question 1) was much more prevalent (~27% of the patients had some level of concern) compared with other areas addressed by the subsequent questions assessed (levels of concern ranged from 6.5%-13%). More men (10.8%) were "very much" impacted compared with women (3.2%), although the proportions were not significantly different ($P = .3$). Our study found other gender differences in body image concerns of patients who had undergone pacemaker implantation. Women were more concerned about the site and scar changing the way they felt about their body than the pacemaker itself. Women were also more concerned about the way their clothes fit or about wearing a bathing suit. Many of the patients' written comments pertained to appearance or clothing (Table IV). In fact, Pelletier and colleagues[11] reported that 34% of the patients with ICDs who were surveyed wanted the device to be made smaller when asked what they wanted most changed about the devices. Men in our study were more concerned about how their spouses or significant others perceived their body postimplantation. Wingate[2] suggests that sex role identities and cultural expectations of sexuality may have more of an influence on pacemaker acceptance than gender alone. These are areas in need of further research.

When examining possible reasons why the patients adapted so positively, several reasons may be plausible. The patient population had an older median age compared with the patient population in the study by Dubin and colleagues,[9] which reported a markedly higher incidence of concern over clothes fitting over the device and anxiety about sex after ICD placement. However, when

age was examined, group analysis of our results did not reveal a significant difference in patient concern based on age alone. These findings support previous findings by Wingate[2] (whose study had a similar patient population in age and mean time since pacemaker implantation) that age is unrelated to psychosocial acceptance. However, it is important to note that dual-chamber pacemakers were somewhat larger when implanted in the 1980s compared with those of today.

Table IV. Summary of written patient comments

Themes from written comments on patient surveys	**Number of patients**
Comments about spouse or lack of spouse impact on pacemaker adaptation	18 patients total
• Comment that they did not have spouse/significant other, widowed, or celibate	15 patients
• Comment about spouse having a pacemaker too, indicating a positive acceptance	3 patients
Overall number of patients with written comments on pain/discomfort	7 patients total
• General discomfort at the pacemaker site	3 patients
• Hurts to lie on their left side	1 patient
• Uncomfortable to wear a seat belt	1 patient
• Discomfort is worse on humid days	1 patient
• Discomfort is worse with their arthritis	1 patient
Change in acceptance level over time	7 patients
• Forgot their pacemaker was there at times	3 patients
• Problems had resolved	3 patients
• Family initially concerned, resolving after 5–6 mo	1 patient
Concerns over clothing or size of pacemaker scar	6 patients total
• Unable to wear low-necked dresses or certain types of shirts	2 patients
• Bra strap hits their scar	1 patient
• Designed a “pad” to place between the site and the strap	1 patient
• Large “size” of the pacemaker scar	2 patients

Another possible explanation for such positive body image adaptation by the women in this study is that the women may have accepted and valued the change brought about by the pacemaker. Fleury and colleagues[12] reported that women seek opportunities to redefine themselves in their recovery after an acute cardiac event (eg, myocardial infarction or coronary artery bypass graft). Recovering women were noted to find strength they “never thought they had,” which empowered them to become more comfortable with their limitations. The women in Fleury and colleagues’ study experienced a reemergence of self-integrity. The women accepted themselves for who they were and became more flexible in their expectations of self, not being judged by others for worth, value, or beauty. One woman who had undergone coronary artery bypass graft surgery described that she no longer tried to hide her scars, stating “this is me.” Women who adapted positively in Fleury and colleagues’ study had developed a new and positive self-image to better cope with their chronic illness. The support of a partner, friend, or family member was identified as 1 way that women had gained inner strength in their own recovery.

Another likely reason for a high rate of positive body image acceptance in our study may have been that most of our patients may have reached the third phase of adaptation, “integration,” as

described by other authors.[5,6] Data indicate that it may take from 3 months to 1 year for most patients to fully adjust to ICD implantation.[13] Wingate,[2] however, alternatively suggests that patient adjustment is more of a dynamic process rather than a progressively improving process, perhaps because of the eventual need for battery replacement.[2] With a mean time since pacemaker implantation of 3.3 years, most of our patients may have learned to live with an adjustment to their life with a pacemaker but not be close to the time of possible battery replacement. Written comments by patients referred to the fact that either they or their families "forgot" their pacemaker was there at times (Table IV).

Study limitations

Study participants were limited to volunteers who took part in the MOST trial; therefore this was a sample of convenience. Sites were selected by those site coordinators who volunteered to participate in the study, offering questionnaires to patients at the closeout visit. Whereas 19% of the overall MOST trial participants actually took part in this study, responses may not represent the pacemaker population at large.

The study was retrospective and cross-sectional in design. A longitudinal study design may allow study of body image alteration over time. The general nature of the questionnaire was that of self-report, which may have limited our ability to identify some patient concerns.

Nonsignificant results may indicate lack of power rather than lack of differences. A larger sample size may have provided more statistically significant results. Other nondemographic variables not identified may have played a role in patient acceptance levels.

Implications for future practice

Although our study demonstrated differences in levels of acceptance of pacemaker implantation according to gender, assumptions for levels of body image adaptation should not be made based on demographic variables alone. An individualized approach is necessary.[4,12] Nurses are in a unique position to offer a complete assessment of how patients and their families are coping with a new pacemaker. Assessments should be performed in an unhurried environment during the scheduled outpatient follow-up visits that patients with new pacemakers undergo. Strategies to help patients find personal strengths within themselves for self-acceptance should be promoted by health care providers.[12] Openly discussing the actual benefits of the pacemaker may be 1 effective way to provide strength to patients. Presenting a realistic expectation of the cosmetic outcomes of surgery and the potential for body image changes in advance of the procedure may be helpful. Patients should be encouraged to openly discuss any potential or real concerns that they may have. Additional strategies to help patients find inner strength may include maintaining an active lifestyle, getting involved in the community, and focusing on the physical traits that one feels good about. Finally, the support of a partner, friend, or family member may be another means to which the patients may gain inner strength in their own recovery.[12]

Reassurance is essential when interacting with patients who have undergone pacemaker implantation. Providing patients with written contact information for the pacemaker follow-up, including the names of the nursing staff, may provide additional comfort for patients and their

families. Educational interventions should be provided to increase knowledge before the pacemaker insertion, as "anticipatory guidance," with ongoing teaching after pacemaker implantation as a means of reinforcement.[7–9,11,13,14]

Support groups or outreach programs for community education are another possible intervention that may be targeted for patients and families after pacemaker implantation.[8] Pycha and colleagues[8] reported that approximately half of patients with ICDs (44%) and spouses (54%) expressed a desire for a support group. Duru and colleagues[14] reported that approximately 20% of patients with pacemakers and 20% of patients with "nonshocked" ICDs expressed interest in joining a support group compared with 42.4% of patients with "shocked" ICDs. Support groups offer many benefits including a means to help patients "tell the story" of how they healed, offering new patients a sense of universality or a sense of not being alone with the "problem."[13,15] Heller and colleagues[16] showed that 96% of patients with ICDs who attended support groups found them to be helpful, felt healthier, were better able to work, and were more interested in social functions. Other possible benefits to support groups include the possibility of improving family dynamics, although no outcome studies of this type are in existence.[4]

Training for clinicians (physicians, nurse practitioners, staff nurses, and pacemaker representatives) should include education not only on the management of the technical aspects of the pacemaker itself but also on the understanding of psychosocial aspects such as changes in body image of patients with pacemakers.[4,14] A more holistic family-centered approach is necessary.[4] In a climate of decreased length of hospital stay, assessment of body image changes in patients undergoing pacemaker implantation should be a routine part of the first postimplantation visit in which the wound check is performed.[13] Because most wound checks are performed in the outpatient setting, the role of the office nurse is important for assessing acceptance in patients with new pacemakers. Last, increased communication between the hospital providers and the follow-up personnel in the outpatient setting would serve to potentially improve dialogue about patients potentially at risk for body image concerns.

Conclusion

Our study provides insight into changes in body image for those patients who receive permanent pacemakers while participating in a multicenter, long-term clinical trial. The results of this study suggest that patients and their spouses or significant others adapt adequately in regard to body image after pacemaker implantation. Although the majority of patients with pacemakers in this study did not have concerns about body image, patients need to be assessed individually. For those patients identified as having body image concerns, interventions should be designed to elicit support systems that promote positive adaptation to optimize patient outcomes. Future research studies examining prospectively the question of body image before pacemaker implantation and at prespecified time intervals after implantation may yield further information in this area of patient care.

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